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SUBJECT: WAITING TO INHALE: THE STATE OF AIR POLLUTION IN SOUTH CHINA (PART ONE OF TWO)

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REF: 05 GUANGZHOU 031999

¶1. (SBU) SUMMARY: AIR POLLUTION IN CHINA HAS GROWN SO BAD THAT CHINESE OFFICIALS ARE ACKNOWLEDGING THE CHALLENGE IT PRESENTS, AND VARIOUS FOREIGN SCHOLARS ARE OFFERING ALARMING STATISTICS ABOUT THE FINANCIAL AND HEALTH COSTS IT BRINGS. IN SOUTH CHINA, FACTORIES AND THE INFRASTRUCTURE THAT SUPPORTS THEM GENERATE CONSIDERABLE AIR POLLUTION. IN ADDITION, THE REGION CONSUMES VAST AMOUNTS OF "DIRTY" COAL FOR ENERGY, RARELY IMPLEMENTS EMISSION-CONTROL TECHNOLOGIES, AND IS HOME TO A GROWING NUMBER OF VEHICLES. NOW THAT MANY OF THE POLLUTANTS THAT MAKE UP THE REGION'S HAZE ARE BEGINNING TO BE SCIENTIFICALLY MEASURED, THE FINDINGS ARE ALARMING. HOWEVER, FINE PARTICLE (PM2.5) POLLUTION -- WHICH IS DEEMED TO BE OF HIGHEST CONCERN FOR PUBLIC HEALTH -- IS NOT MEASURED. THOSE LOBBYING FOR ITS INCLUSION IN AN INDEX OF POLLUTANTS CONCEDE THAT INCLUDING A POLLUTANT WHOSE

CURRENT LEVELS WOULD MEASURE SO FAR ABOVE ACCEPTABLE STANDARDS WOULD BE POLITICALLY DIFFICULT. IT MAY BE TOUGH FOR LOCAL OFFICIALS, LONG HERALDED FOR THEIR ECONOMIC ACHIEVEMENTS, TO EXPAND THEIR FOCUS TO INCLUDE ENVIRONMENTAL CONCERN WHEN IT CONFLICTS WITH THE NEED FOR ECONOMIC GROWTH. END SUMMARY.

¶12. (SBU) ANYONE WHO HAS SPENT TIME IN SOUTH CHINA IS ALL TOO FAMILIAR WITH THE BROWN HAZE THAT FREQUENTLY OBSCURES THE PEARL RIVER DELTA (PRD) REGION. ECONOFF AND VISITING EMBASSY SCIENCE FELLOW -- WHO IS WITH THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S (EPA) OFFICE OF AIR QUALITY PLANNING AND STANDARDS -- IN A TWO-PART SERIES OF CABLES LOOK AT THE CURRENT STATE OF AIR POLLUTION IN SOUTH CHINA (PART I), AND EVALUATE SOME OF THE MEASURES BEING TAKEN BY LOCAL ENTITIES TO COMBAT THE PROBLEM (PART II).

CHINA: A NATION OF POLLUTERS PAYING THE PRICE

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¶13. (SBU) CHINA IS GROWING INCREASINGLY INFAMOUS AROUND THE WORLD FOR ITS HIGH LEVELS OF POLLUTION. POLLUTION HAS BECOME SUCH A LARGE PROBLEM THAT CHINESE OFFICIALS ARE NOW ACKNOWLEDGING THE CHALLENGE IT PRESENTS; PREMIER WEN JIABAO SURPRISED MANY EARLY THIS YEAR WHEN HE ADMITTED THAT ENVIRONMENTAL PROTECTION HAS BECOME THE WEAKEST ASPECT IN CHINA'S SOCIAL AND ECONOMIC DEVELOPMENT. THE DEPUTY CHIEF OF THE STATE ENVIRONMENTAL PROTECTION AGENCY (SEPA) SAID PUBLICLY THAT DAMAGE TO CHINA'S ENVIRONMENT IS COSTING THE GOVERNMENT APPROXIMATELY 10% OF CHINA'S GDP (APPROXIMATELY USD 200 BILLION). A HARVARD SCHOLAR PREDICTED THAT BY 2030, 15% OF CHINA'S GDP WILL BE LOST TO THE INCREASED HEALTH COSTS AND MORTALITY DUE TO DOMESTIC ENVIRONMENTAL POLLUTION. A YALE SCHOLAR ESTIMATED THAT MORE THAN HALF OF CHINA'S ANNUAL GDP GROWTH WOULD BE ELIMINATED IF THE FULL COSTS OF ENVIRONMENTAL DEGRADATION WERE TAKEN INTO ACCOUNT.

ESPECIALLY WHEN IT COMES TO AIR POLLUTION

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¶14. (SBU) CHINA IS HOME TO SEVEN OF THE TEN MOST AIR-POLLUTED CITIES IN THE WORLD. A WORLD BANK REPORT NOTED THAT CHINA'S HEAVY INDUSTRY AND RESIDENTIAL COAL BURNING -- WHICH PROVIDES ROUGHLY 70% OF CHINA'S ENERGY -- TOGETHER WITH INADEQUATE POLLUTION CONTROLS, RAMPANT DEFORESTATION, AND A SHARP INCREASE IN THE NUMBER OF MOTOR VEHICLES ARE ALL FACTORS THAT CONTRIBUTE TO AIR POLLUTION. WANG JINNAN, THE CHIEF ENGINEER AT THE CHINESE ACADEMY ON ENVIRONMENTAL PLANNING, PART OF THE STATE ENVIRONMENTAL PROTECTION ADMINISTRATION (SEPA), SAID THAT ONE-THIRD OF CHINA'S URBAN DWELLERS CURRENTLY LIVE IN CITIES WITH LEVEL TWO OR HIGHER POLLUTION, WITH LEVEL TWO BEING CONSIDERED HARMFUL TO

HEALTH, AND LEVEL THREE CONSIDERED "VERY DANGEROUS."

¶15. (SBU) THE VICE MINISTER OF SEPA, ZHANG LIJUN, SAID AT A 2005 INTERNATIONAL CONFERENCE THAT WORSENING AIR QUALITY, ESPECIALLY IN MAJOR CITIES, WAS LEADING TO "MORE AND MORE SERIOUS" HEALTH PROBLEMS. HE ADDED THAT THE LEVEL OF AIR POLLUTION EMISSIONS IN CHINA MAY INCREASE 4-5 TIMES IN THE NEXT 15 YEARS UNDER A BUSINESS-AS-USUAL SCENARIO. ZHEJIANG UNIVERSITY'S PROFESSOR CEN KEFA -- A HIGHLY-RESPECTED MEMBER OF THE CHINESE ACADEMY OF ENGINEERING WHO COLLABORATES CLOSELY WITH U.S. EPA SCIENTISTS -- SAID PUBLICLY IN MARCH 2006 AT AN INTERNATIONAL CONFERENCE THAT CHINA'S CO<sub>2</sub> EMISSIONS IN 2001 WERE THE SECOND HIGHEST IN THE WORLD AFTER THE UNITED STATES, AND ITS SO<sub>2</sub> EMISSIONS WERE LIKELY THE HIGHEST.

AND IN SOUTH CHINA AS WELL

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¶16. (SBU) IN THE PRD, INDUSTRIALIZATION, COMMERCIAL DEVELOPMENT, A RAPIDLY GROWING POPULATION, AND AN INCREASE IN MOTOR VEHICLES HAVE ALL LED TO SMOGGY AIR AND REDUCED VISIBILITY THROUGHOUT THE REGION. THE PRD IS OFTEN REFERRED TO AS THE WORLD'S FACTORY FLOOR, AND WHILE THE REGIONS

MANUFACTURING INDUSTRIES HAVE CREATED AN ECONOMIC BOON FOR THE REGION, THESE FACTORIES -- AND THE POWER AND TRANSPORT INFRASTRUCTURES THAT SUPPORT THEM -- TYPICALLY USE INADEQUATE OR NO POLLUTION CONTROL TECHNOLOGIES AND THUS GENERATE CONSIDERABLE AIR POLLUTION. A MARCH 2006 STUDY PUBLISHED ON ENVIRONMENTAL SCIENCE AND TECHNOLOGY ONLINE NEWS REPORTED THAT THE REASON EXPORT GOODS MANUFACTURED IN THE PRD ARE SO CHEAP -- AND HENCE SO DESIRABLE -- IS BECAUSE THE REGION LACKS POLLUTION CONTROLS. THE PIECE ESTIMATED THAT A "SIGNIFICANT PERCENTAGE" OF SO<sub>2</sub>, NO<sub>X</sub>, AND PARTICULATE MATTER (PM) IN THE AIR CAN BE DIRECTLY ATTRIBUTED TO THE PRODUCTION OF EXPORTS.

17. (SBU) THE GUANGDONG METEOROLOGICAL BUREAU'S DEPUTY DIRECTOR SAID PUBLICLY THAT THE POOR AIR QUALITY IN GUANGZHOU WAS ATTRIBUTABLE TO THE SO<sub>2</sub> AND NO<sub>X</sub> DISCHARGED BY POWER PLANTS AND EMITTED FROM AUTOMOBILES. (NOTE: BECAUSE OF VARYING ENVIRONMENTAL STANDARDS, CARS DESIGNED AND MANUFACTURED IN CHINA EMIT MUCH HIGHER CO, NITROGEN OXIDE, AND HYDROCARBONS THAN U.S. AND JAPANESE MODELS, ACCORDING TO A GEORGETOWN UNIVERSITY-PUBLISHED STUDY, THOUGH CHINA HAS ADOPTED EURO3 EMISSION STANDARDS FOR NEW VEHICLES. END NOTE.) THE CONCENTRATION OF SO<sub>2</sub> IN GUANGDONG'S ATMOSPHERE, FOR EXAMPLE, HAS GROWN BY AN AVERAGE ANNUAL RATE OF 7.8% FOR THE PAST FIVE YEARS, ACCORDING TO HONG KONG PRESS REPORTS, EVEN THOUGH THE REST OF CHINA, ON AVERAGE, HAS EITHER DECREASED OR SEEN A LEVELING OF SO<sub>2</sub> EMISSIONS. A U.S. DEPARTMENT OF ENERGY/ARGONNE NATIONAL LAB STUDY, HOWEVER, REPORTED THAT NATIONAL LEVELS HAVE STARTED TO INCREASE AGAIN OVER THE PAST TWO YEARS.

GUANGDONG: A TOP CONSUMER OF DIRTY COAL

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18. (SBU) GUANGDONG'S ENERGY CONSUMPTION IS BY FAR HIGHER THAN ANY OTHER PROVINCE IN CHINA. MOST OF THIS ENERGY IS CREATED BY BURNING COAL (43% IN 2003, ACCORDING TO A RECENT STUDY BY A HONG KONG THINK TANK), WHICH GENERALLY GIVES OFF MORE POLLUTING EMISSIONS THAN EITHER GAS OR OIL. COAL IS LIKELY TO REMAIN THE MOST IMPORTANT ENERGY SOURCE FOR THE FORESEEABLE FUTURE. GUANGDONG'S POOR AIR QUALITY IS EXPECTED TO FURTHER DETERIORATE BECAUSE THE PROVINCE HAS STARTED TO USE COAL OF INFERIOR QUALITY (I.E. WITH A HIGHER SULPHUR CONTENT) TO RUN POWER PLANTS AND INDUSTRIAL BOILERS DUE TO SHORTAGES OF LOW-SULPHUR COAL. ACCORDING TO POWER INDUSTRY SOURCES, ONE-THIRD OF GUANGDONG'S POWER GENERATION IS SMALL-SCALE, OUTDATED, AND HIGHLY POLLUTING, BUT STILL USED BECAUSE OF ENERGY SHORTAGES IN THE RAPIDLY-GROWING REGION, NOT TO MENTION MANY OTHER SMALLER UNCONTROLLED

INDUSTRIAL BOILERS. ONLY 12% OF GUANGDONG'S COAL PLANTS HAVE EMISSION-CONTROL TECHNOLOGIES SUCH AS FLUE-GAS DESULPHURIZATION, AND EVEN THOSE PLANTS SOMETIMES KEEP THE EQUIPMENT OFFLINE TO CUT COSTS, ACCORDING TO THE HONG KONG PEOPLE'S COUNCIL ON SUSTAINABLE DEVELOPMENT AS REPORTED IN AN ENGLISH-LANGUAGE NEWS MAGAZINE. FURTHERMORE, THE CHRONIC POWER SHORTAGES AFFECTING THE REGION MEAN THAT UP TO 90% OF MANUFACTURING PLANTS IN THE REGION USE BACKUP ELECTRICITY GENERATORS, WHICH ARE USUALLY LESS EFFICIENT AND MORE POLLUTING THAN GRID POWER.

HAZY SKIES -- MEASURING THE TOXIC COCKTAIL OF POLLUTANTS

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19. (SBU) IN THE PRD, THE NUMBER OF LOW-VISIBILITY DAYS CAUSED BY HAZE HAS RISEN IN RECENT YEARS; GUANGZHOU, FOR EXAMPLE, HAS MORE THAN 150 GRAY-HAZE DAYS WITH LIMITED VISIBILITY EACH YEAR, UP FROM 90 DAYS PER YEAR IN 1999. COMMENDABLY, THE REGION NOW HAS AN INDEX TO MEASURE THIS POLLUTION, AS GUANGDONG PROVINCE AND HONG KONG AUTHORITIES JOINTLY LAUNCHED A GROUNDBREAKING PRD REGIONAL AIR QUALITY INDEX (RAQI) IN LATE 2005 (SEE REFTEL OR THE RAQI WEBSITE AT [WWW.GDEPB.GOV.CN](http://WWW.GDEPB.GOV.CN) AND [WWW.EPD.GOV.HK](http://WWW.EPD.GOV.HK) FOR MORE INFORMATION) TO MEASURE THE FOUR MAJOR REGIONAL AIR POLLUTANTS. THE FOUR POLLUTANTS WHICH CONTRIBUTE TO THE VISIBILITY DEGRADATION (AS WELL AS A HOST OF HEALTH PROBLEMS) AND ARE REPORTED IN THE RAQI ARE: RESPIRABLE SUSPENDED PARTICULATES (PM10),

SULPHUR DIOXIDE (SO<sub>2</sub>), NITROGEN DIOXIDE (NO<sub>2</sub>), AND OZONE (O<sub>3</sub>). MR. ZHONG LIUJI, DEPUTY DIRECTOR OF GUANGDONG ENVIRONMENTAL MONITORING CENTER (GDEMC), SAID PUBLICLY AT A 2006 INTERNATIONAL CONFERENCE THAT THE PROJECTED PRD AIR QUALITY BETWEEN 1997-2010 IS EXPECTED TO HAVE A SIGNIFICANT INCREASE IN THE EMISSIONS OF TWO OF THESE POLLUTANTS -- SO<sub>2</sub> (BY 40%), AND PM10 (BY 55%) UNDER A BUSINESS-AS-USUAL SCENARIO.

**¶10.** (SBU) ONE OF THE MOST HARMFUL ASPECTS OF SOUTH CHINA'S AIR POLLUTION IS THAT IT CONTAINS VERY HIGH LEVELS OF RESPIRABLE SUSPENDED PARTICULATES, A COMPLEX MIXTURE OF VERY SMALL SOLIDS AND LIQUID DROPLETS ALSO KNOWN AS PARTICULATE MATTER, OR PM. PM IS TYPICALLY DIVIDED INTO TWO CATEGORIES BASED ON THE SIZE OF THE PARTICLES -- PM10, WHICH MEASURES 10 UM, AND PM2.5 WHICH MEASURES 2.5 UM. PM10, WHICH ACCUMULATES IN THE LUNGS, CONTRIBUTES TO DAMAGED LUNG TISSUE AND DECREASED LUNG FUNCTION, AS WELL AS AGGRAVATED ASTHMA. PM2.5, WHICH IS MORE DANGEROUS TO HEALTH THAN PM10 BECAUSE THE PARTICLES ARE SMALLER AND CAN ENTER MORE DEEPLY INTO THE LUNGS, CONTRIBUTES TO ACUTE RESPIRATORY SYMPTOMS, INCREASES THE FREQUENCY OF CHILDHOOD ILLNESSES SUCH AS CHRONIC BRONCHITIS, CAUSES PREMATURE DEATH DUE TO ITS TOXICITY AND CARCINOGENS, AND MORE IMPORTANTLY ALSO CAUSES CARDIOVASCULAR ILLNESSES SUCH AS HEART ATTACKS AND HEART BEAT IRREGULARITIES, ACCORDING TO A NUMBER OF RECENT STUDIES BY HARVARD AND OTHER RESEARCH INSTITUTES. PM2.5 IS ALSO THE PRIMARY CULPRIT FOR VISIBILITY DEGRADATION BECAUSE IT SCATTERS AND ABSORBS SUNLIGHT.

**¶11.** (SBU) IN 2002, THE EPA ASSISTANT ADMINISTRATOR FOR AIR SAID THAT "FINE PARTICLE (PM2.5) IS THE MOST SERIOUS POLLUTANT OF CONCERN FOR PUBLIC HEALTH AND THE ENVIRONMENT." IN OCTOBER 2005, THE WORLD HEALTH ORGANIZATION (WHO) ISSUED UPDATED GUIDELINES TO INCLUDE PM2.5 AS A KEY POLLUTANT AND LISTED SUGGESTED ANNUAL AND DAILY AVERAGE PM2.5 LEVELS TOGETHER WITH INTERIM TARGETS. IN GENERAL, THE PM2.5 LEVELS IN GUANGDONG ARE TYPICALLY 5-10 TIMES HIGHER THAN THE SUGGESTED WHO GUIDELINE LEVELS, AND 2-3 TIMES HIGHER THAN EVEN THE FIRST-TIER INTERIM WHO TARGETS. THE RAQI, HOWEVER, DOES NOT EVEN MONITOR (AND THUS DOES NOT INCLUDE) PM2.5 IN THE LIST OF POLLUTANTS. HONG KONG OFFICIALS HAVE PUBLICLY ACKNOWLEDGED THE IMPORTANCE OF MONITORING PM2.5 IN THE INDEX, BUT THEY CONCEDE THAT INCLUDING A POLLUTANT WHOSE CURRENT LEVELS ARE SO FAR ABOVE ACCEPTABLE STANDARDS -- A SITUATION THAT IS NOT LIKELY TO IMPROVE ANY TIME SOON --

WOULD BE POLITICALLY DIFFICULT. CHINA CURRENTLY HAS NO PM2.5 STANDARD. HOWEVER, ZHONG LIUJI, DEPUTY DIRECTOR OF THE GUANGDONG ENVIRONMENTAL MONITORING CENTER (EMC) TOLD CONGENOFFS THAT IF HONG KONG ADOPTS PM2.5 STANDARDS, GUANGDONG WILL VERY LIKELY FOLLOW SUIT.

COMMENT: DIRTY AIR -- THE PRICE OF BREAKNECK ECONOMIC GROWTH?

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**¶12.** (SBU) AIR POLLUTION IN SOUTH CHINA IS BAD AND GETTING WORSE, MIRRORING CONDITIONS IN MANY OTHER REGIONS IN CHINA. IT IS A SAD IRONY THAT THIS REGION OF CHINA -- SEEN AS A BEACON FOR POOR MIGRANTS WHO WANT TO FIND FAME AND FORTUNE -- HAS ACTUALLY BECOME HARMFUL TO THOSE MIGRANTS' AND OTHERS' HEALTH. OFFICIALS WILL HAVE TO DETERMINE HOW HIGH A PRICE IN TERMS OF THE ENVIRONMENT AND HEALTH THEY ARE WILLING TO PAY TO SUSTAIN THE REGION'S REMARKABLE GROWTH. THUS FAR, THEY HAVE SHOWN THAT ECONOMIC GROWTH TAKES PRIORITY, BUT THIS MAY BE CHANGING. FOR EXAMPLE, IN THE 11TH FIVE-YEAR PLAN, CHINA COMBINED "ENVIRONMENTAL PROTECTION" AND "ECONOMIC GROWTH" AS BINDING INDICATORS TO EVALUATE THE PERFORMANCE OF PROVINCIAL AND LOCAL GOVERNMENTS. OFFICIALS ARE NOW TOUTING THEIR PLANS TO IMPROVE THE SITUATION DURING THE NEXT FIVE YEARS. WHAT IS CERTAIN IS THAT WHILE SOUTH CHINA'S GROWTH AND DEVELOPMENT IS WIDELY ADMIREDT THROUGHOUT THE COUNTRY, THE AIR POLLUTION THE REGION NOW EXPERIENCES IS MANIFESTLY UNENVIABLE.

MARTIN